Transhiatal gastrobronchial fistula: A case report

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We present a case of gastrobronchial fistula after laparoscopic Nissen fundoplication. Although a known complication of antireflux surgery, this is the first case reported occurring after laparoscopic Nissen fundoplication or fundoplication with an intra-abdominal wrap. All previously reported cases involved an initial open operation and an intrathoracic wrap either intentionally left or subsequently herniating into the chest.

Clinical Summary
A 46-year-old man came to the emergency department with hemoptysis. His symptoms began 5 days before admission, with a cough and shortness of breath that progressed to hemoptysis. History was significant for asthma, cigarette smoking, and a Nissen fundoplication 5 years previously. His admission hematocrit value was 18.7%, for which packed red cells were transfused. White blood cell count was 17,000, platelet count was 631,000, creatinine level was 1.3 mg/dL, international normalized ratio was 1.2, and partial thromboplastin time was 34.9 seconds. Soon after admission, his respiratory status decompensated, and he required emergency intubation. A chest radiograph showed mild bilateral infiltrates, and bronchoscopy showed nonbloody bilious secretions in the airways bilaterally. Esophagogastroduodenoscopy demonstrated Mallory-Weiss tears and an esophageal ulcer. Initial treatment was for exacerbation of asthma, an upper gastrointestinal bleed, and aspiration. On hospital day 6, a computed tomographic scan demonstrated a left pleural effusion (Figure 1). An upper gastrointestinal series revealed contrast flowing from the gastroesophageal junction into the left pleural space through the hiatus (Figure 2). On review of his fundoplication operative note, the wrap was accomplished with 3 simple sutures, each incorporating the anterior esophagus. The crural closure consisted of 2 sutures placed anteriorly.

He was taken to the operating room. Preoperative bronchoscopy revealed bilious secretions. A left thoracotomy was performed, and a sixth intercostal muscle flap was harvested. A large (10 cm × 10 cm) necrotic abscess in the left posterior and lateral basal segments of the left lower lobe was encountered. Multiple necrotic subsegmental bronchioles opened into the abscess cavity. The abscess tract descended through the hiatus. A thoracoabdominal incision was made, and the diaphragm was opened. The previous fundoplication was intact. The fistula tract originated from the gastric fundus as it passed behind the esophagus as part of the Nissen fundoplication. The gastric perforation was debrided, sutured closed in 2 layers, and covered with omentum. A Belsey Mark IV fundoplication with uninvolved fundus was performed to reconstruct the gastroesophageal junction, and a feeding jejunostomy was placed. The diaphragm and hiatus were closed with interrupted horizontal mattress sutures. The necrotic portions of the left lower lobe were resected with an Endo GIA stapler (Auto Suture Company Division, United States Surgical Corp, Norwalk, Conn), and all bronchi in the margins of resection were ligated. The intercostal muscle flap was sutured to the margin of the lung resection and used to fill the abscess cavity. Multiple drains were placed in both the chest and abdomen before closure.

The patient had no air leak postoperatively. His postoperative course was prolonged, including 41 days on a ventilator requiring a tracheostomy, a wound infection, and a calf vein thrombosis. Abscess culture grew Candida albicans, which was treated with 2 months of fluconazole. The patient was discharged to a skilled nursing facility 64 days after admission. He was last seen in follow-up 4 months postoperatively, at which time he was doing well, with a healing chest wound, increasing exercise tolerance, gradual weight gain, and mild reflux symptoms.

Conclusions
Acquired fistulas involving the tracheobronchial tree and the upper gastrointestinal tract are rare but life-threatening complications of malignancy, trauma, infection, or surgical intervention. These most commonly occur in the setting of advanced malignancy1 or after esophageal resection. There have been approximately 6 previously reported cases of gastrobronchial fistula after Nissen fundoplication.2,3 Four of the 6 cases involved a transthoracic Nissen fundoplication, and the remaining 2 were done transabdominally. All of these cases involved a wrap that was left above the diaphragm. This is the first reported case of an intra-abdominal Nissen fundoplication with an intact crural closure associated with gastropleurobronchial fistula formation. In this case the patient presented with hemoptysis. This presentation is shared by 2 of the 6 previously reported cases.2,3 Other symptoms included gastrointestinal bleeding, chronic cough, and recurrent pneumonia. Related complications after fundoplication include gastropericardial fistula, esophagobronchial fistula, and aortogastric fistula.4

The diagnosis of this rare complication is often difficult. Patients commonly present with mild chest pain or pneumonia but can potentially become very ill. As in this case, bilious secretions on bronchoscopy might be thought to be caused by aspiration, and neither bronchoscopy nor endoscopy reliably reveals the fistula.2
As such, an upper gastrointestinal tract series is the most reliable diagnostic modality. Care must be taken to not misinterpret the findings as aspiration of contrast.

Once the diagnosis has been made, surgical intervention is the mainstay of treatment. Regardless of cause, surgical management involves repair of the gastric perforation, diaphragmatic repair, and, frequently, pulmonary resection.  

References